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Investigation of Awareness Level about TLD Badge among Radiology Students

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ABSTRACT

Aim and objective: To investigate the overall knowledge and awareness about TLD Badge among radiology students.
Method and materials: MCQ questionnaire based data collected through Google forms. Out of 180 participants was participated, 176 were responded.
Result: Maximum participants did not categorise the TLD badge about personnel monitoring and area monitoring, radiation monitoring and radiation protection etc.
Discussion: Overall knowledge and awareness level about the TLD Badge is very less among radiology students. Being as radiology students, all must know the radiation safety as well radiation monitoring process.
Conclusion: Use of personnel radiation monitoring device is an integral part of radiology practice.

Keywords: TLD Badge, Personnel monitoring device, Radiation protection, Dosimeter

INTRODUCTION

Advancement in the health care profession, increase the use of radiation in the medicine. Today this department is growing tremendously and is much important for the health care system. Since radiation cause various health hazards while compromising the safety guidelines, especially while using ionizing radiation. Ionising radiation from medicine represents the maximum radiation doses to the public [1]. Advance modalities used in radiology department such as MDCT contributes approx. 50% of the radiation exposure alone [2]. As most of the research paper published shown that, the awareness about radiation safety and radiation dose received from the particular medical imaging investigation is not satisfactory [3-6]. Increasing the radiation application in the medicine intended to use radiation monitoring device/equipment. It is very important to aware about the basics of radiation monitoring device, their work and use. It can help further radiation dose awareness and radiation protection also. Radiation doses monitoring received by radiation professionals in radiology department are very importance in efforts to save themselves from the hazardous effect of excessive radiation dose [7]. Commonly used radiation monitoring device in radiology departments are TLD Badge, pocket dosimeter etc. [8]. Radiation dese report must be kept in record to evaluate the history and possible risks related to radiation effects. It can help to improve the practice in radiology department [9]. Radiation monitoring and keeping their record is an integral part of radiology practice world-wide [10-11].

It has been observed that, the use of TLD Badge in the radiology practice is very irresponsible and irregular, even after getting TLD Badge radiology professional do not wear while working in radiation

zone. This research is intended to investigate the overall knowledge and awareness about TLD Badge among radiology students.

METHOD AND MATERIALS

The cross-sectional study on the topic of TTLD Badge awareness was conducted at the Department of Allied health science Brainware University, Barasat Kolkata West Bengal. All data were collected from online survey based using Google form. A four section MCQ questionnaire was administered in this survey. Each correct response was allocated 1 mark. There is no marking scheme were allotted for wrong answer. The questionnaires were collected after being filled by the students within 30 min.

The first section consists of demographic data including age, profession either medical doctors or Allied health professional. The second section consists of core questions about the TLD Badge including, which type of radiation measured in TLD, Dose range, frequency to change the TLD Badge, filter used in TLD Badge, radiation dose limit for occupational etc.

Statistical Methods

All the data collected from this survey based study was analysed using with excel software.

RESULT

Total number of 180 participants involved in this survey in which 176 actively responded. Sex ration of active participants were 68% of male and 32% of female of age group 17-27 year.

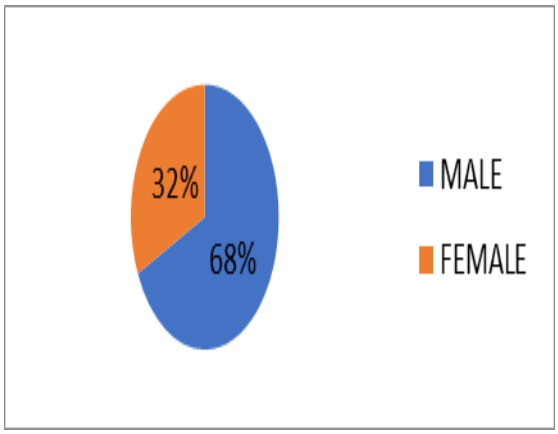

Fig:1 Sex ratio of participants

Maximum participants were 20-21 age group (45.5%). 99.4% of participants was allied health professionals and 0.6% was Doctor. Highest qualification of the maximum participants (62.5%) was graduation.

Out of 176 active participants only 73.3% know TLD Badge is personnel monitoring device, 1.1% responds as a survey meter, 0.6% responds as an area monitoring device while 25% responds that, TLD is used as both personnel and area monitoring device.

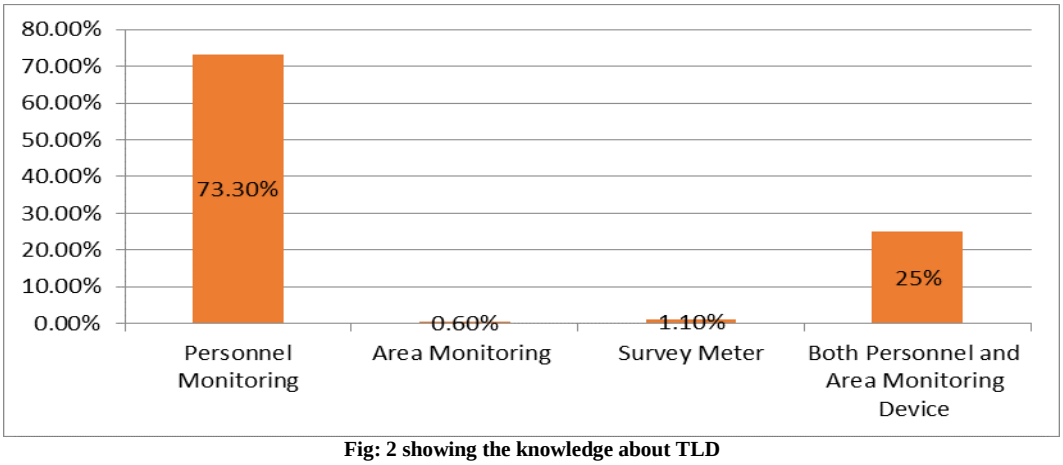

Fig: 2 showing the knowledge about TLD

Knowledge about TLD number continuity, 88.1% responds that, same number cannot be used by other personnel; it is a unique and individual number. 82.4% participants know that, TLD Badge use to measure various type of radiation including Beta, x-ray and Gamma radiation,

while 15.3% responded that, it measures x-ray, 1.7% responded that it measures gamma ray and 0.6% responded that, it measures beta ray only.

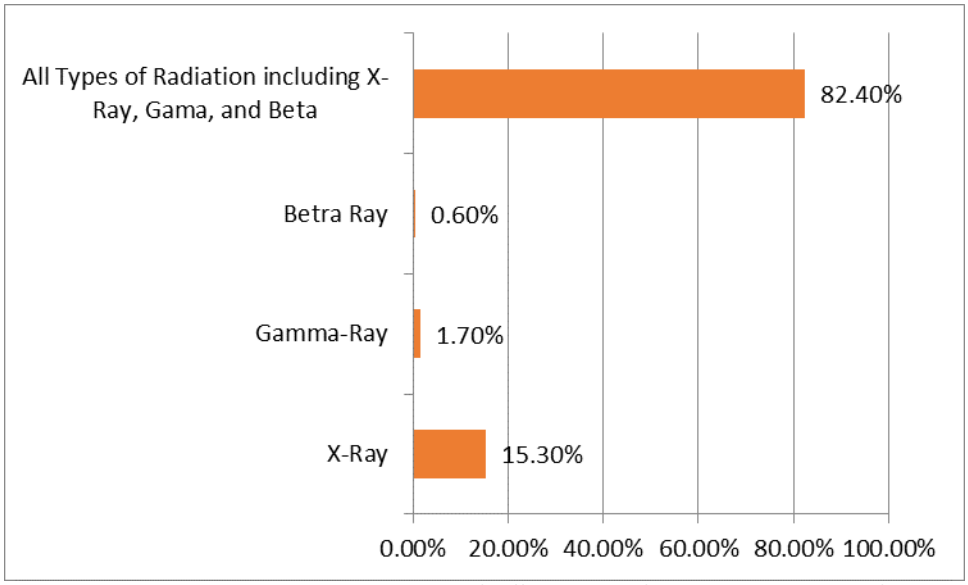

Fig:3 Showing the knowledge about the measurement of Different types of radiation with the help of TLD Badge

Knowledge about disc used in TLD is very poor, only 58% participants correctly answered. Awareness about TLD card replacement was also very poor, only 63.6% participants aware about the correct time frame to change the TLD card i.e. after three months. 33.5% said that, it changed after one month, while 2.8% said that it changed after two months.

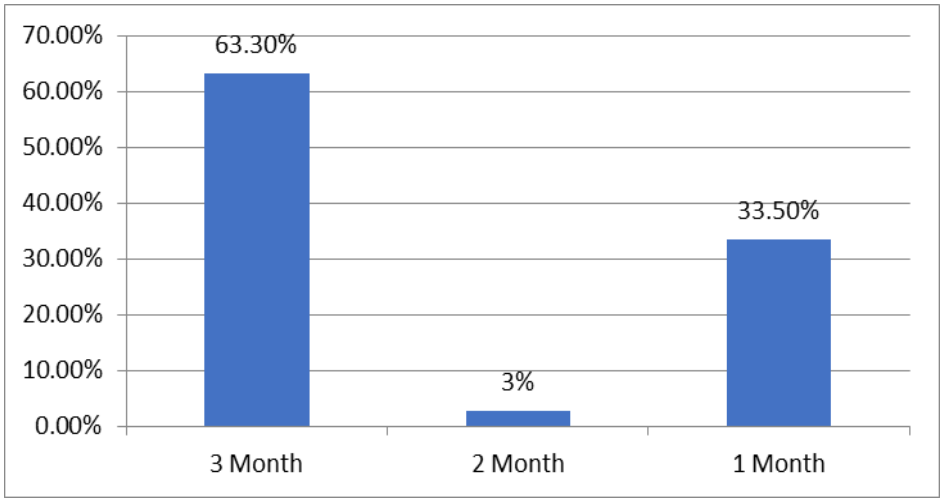

Fig:4 Awareness about TLD card replacement Frequency

92% participants know that, CaSO4: Dy Teflon discs based TLD Badge used in the diagnostic radiology as a personnel radiation monitoring device since 1975. Only 81.8% was aware about the correct wearing of TLD Badge (at chest or waist level and if a lead apron is used during procedure, it should be used under the apron).

When we compare radiation safety and radiation monitoring device, 80.7% responded that, TLD used as a radiation monitoring, 2.3% responded that it acts as a radiation safety device, 1.7% responded that, it acts as a radiation protection device, while 15.3% participants responded that, TLD Badge act as a radiation monitoring as well as radiation protection/safety also. Knowledge about radiation annual radiation

limit among radiology professional is also not much satisfactory. Only 80.1% participants correctly responded the questionnaire.

DISCUSSION

Radiation is widely used in the medical science for variety of the purpose such as diagnostic as well therapeutic purpose also. Advancement of technology in the medicine also increases the radiation exposure to the public as well radiation professionals. Radiation monitoring and keeping their record is a part of slandered radiology practice and it is also useful for future references in case of any radiation induced problems noted in the radiation professionals. There are variety of the devices is available to monitor the radiation dose for personnel as well for a particular area. TLD Badge is most usable radiation monitoring device in the radiology department by radiation professional including doctors and technologist. Wearing of TLD Badge is a very big issue due to lack of awareness about, how to use!, how to store! Etc. most of the time it also observed that, radiation professional avoids wearing TLD Badge without any explanation. On the data collected in this study, there are various lacks of awareness and knowledge about TLD badge and slandered radiation threshold for radiation professionals. Only 73.3% participants aware about that, TLD Badge are a personnel monitoring device. It's very shocking result for a radiology students, because they must know about this. 82.2% know that TLD measure all type of radiation including x ray, beta and gamma. About the knowledge to change the TLD card is also very less, only 63.3% participants know the correct frequency to change the TLD card. Some of the participants also said that, TLD Badge is a radiation protection device, it cannot protect from radiation. TLD Badge do not provide any protection from radiation, it just measures the radiation dose.

Overall knowledge and awareness level about the TLD Badge is very less among radiology students. Being as radiology students, all must know the radiation safety as well radiation monitoring process. We need to improve the quality of education as well as also practically trained the radiology students about TLD Badge. Their uses, handling and storage etc.

CONCLUSION

In a short summary, using a TLD Badge is an integral part of radiology practice. But due to lack of awareness, most of the professionals avoid to wear the badge. It doesn't provide any protection from radiation. We have to sensitize the radiation worker to wear the badge. It can further improve the radiology practice as well as health consciousness also.

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Ethical Approval: Approved

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